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DARBY & DARBY P.C.
P.O. BOX 770
Church Street Station
New York, NY 10008-0770

EXAMINER	
DWIVEDI, MAHESH H	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/595,252	ROZENBLATT, ASSAF	
	Examiner	Art Unit	
	MAHESH H. DWIVEDI	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-68 and 197-208* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-68 and 197-208* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 June 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/30/06,12/1/06, & 8/14/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on 03/30/2006, 12/01/2006, and 08/14/2008 have been received, entered into the record, and considered. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

The NPL references CB and CC for the IDS filed on 12/01/2006 are not being considered because applicant has not provided the required Month AND Year for the aforementioned references.

Election/Restrictions

2. Applicant's election of Group I (claims 1-19, 20-35, 36-53, 54-68, 197-202, and 203-208) in the reply filed on 06/01/2010 is acknowledged.

The examiner notes that the response filed on 06/01/2010 did not indicate whether applicant's elected with or without traverse for group I. For purposes of examining the instant office action, the examiner considers applicant's election **without traverse**.

Remarks

3. In the response filed on 06/01/2010, applicant's state that "Applicant further appreciates the Examiner's comment, in clause of the Office Action, that claims 1-5 and 8-22, contained in Group I, are in condition for allowance". However, the examiner wishes to state that the aforementioned mentioning of allowable subject matter was a typographical error in the requirement for restriction mailed on 05/07/2010. Claims 1-5, and 8-22 are not considered as allowable subject matter.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-15, 18-32, 34-49, 52-65, 67-68, and 197-208 are rejected under 35 U.S.C. 102(b) as being anticipated by **Wang et al.** (U.S. PGPUB 2004/0243568).

6. Regarding claim 1, **Wang** teaches a document searching method comprising:

A) employing a computer to receive, from a user, a query including at least one search term (Paragraphs 22 and 66);

B) employing computerized answer retrieving functionality to generate document search terms including at least one additional search term not present in said query, which said at least one additional search term was acquired, prior to receipt by said computer of said query from said user, by said computerized answer retrieving functionality in response to at least one query in the form of a question (Paragraphs 55-57, 60); and

C) operating computerized search engine functionality to access a set of documents in response to said query, based not only on at least one search term supplied by said user in said query, but also on said at least one additional search term provided by said computerized answer retrieving functionality (Paragraphs 55 and 59).

The examiner notes that **Wang** teaches **"employing a computer to receive, from a user, a query including at least one search term"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22) and "At block 302, the search engine 140 receives a user query entered at remote client 102. At block 304, the user query is parsed at the natural language robust parser 142 to produce the parsed concepts (if any) and keywords" (Paragraph 66). The examiner further notes that **Wang** teaches **"employing computerized answer retrieving functionality to generate document search terms including at least one additional search term not present in said**

query, which said at least one additional search term was acquired, prior to receipt by said computer of said query from said user, by said computerized answer retrieving functionality in response to at least one query in the form of a question" as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table. After natural language processing, the concepts and keywords are passed on to the FAQ matcher 144. The FAQ matcher 144 has a FAQ matching component 206 that attempts to match the concepts and keywords to predefined frequently asked questions stored in a FAQ database 208. From the FAQs, the FAQ matching component 206 identifies related templates from a template database 210 that group together similar question parameters. The templates have associated indexed answers that are maintained in an answer database 212" (Paragraphs 55-56) and "In addition to facilitating various search levels in an integrated manner, the search engine architecture 140 also supports a query log analyzer 148 that implements methodology to process query logs for the purpose of obtaining new question templates with indexed answers" (Paragraph 60). The examiner further notes that **Wang** teaches **"operating computerized search engine functionality to access a set of documents in response to said query, based not only on at least one search term supplied by said user in said query, but also on said at least one additional search term provided by said computerized answer retrieving functionality"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are

either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55) and "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59).

Regarding claim 2, **Wang** further teaches a document searching method comprising:

A) wherein said query is a question (Paragraphs 22 and 71-76).

The examiner notes that **Wang** teaches **"wherein said query is a question"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22) and "For instance, users who want to know about Chinese restaurants in Seattle might enter queries quite differently, as illustrated by the following examples…Where is the closest Chinese restaurant? What is the best Chinese restaurant in Seattle" (Paragraphs 71-76).

Regarding claim 3, **Wang** further teaches a document searching method comprising:

A) wherein said query is not a question (Paragraphs 22 and 71-76).

The examiner notes that **Wang** teaches **"wherein said query is a question"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22) and "For instance, users who want to know about Chinese restaurants in Seattle might enter queries quite differently, as illustrated by the following examples… Chinese restaurants in Seattle. Seattle's best Chinese restaurants" (Paragraphs 71-76).

Regarding claim 4, **Wang** further teaches a document searching method comprising:

A) wherein said employing computerized answer retrieving functionality provides said at least one additional search term by retrieving search terms, acquired other than in response to earlier questions, received by said computerized answer retrieving functionality prior to receipt of said query from said user (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said employing computerized answer retrieving functionality provides said at least one additional search term by retrieving search terms, acquired other than in response to earlier questions, received by said computerized answer retrieving functionality prior to receipt of said query from said user"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 5, **Wang** further teaches a document searching method comprising:

A) wherein said employing a computer comprises employing said computer to receive said query by at least one of: typing said query; using a voice responsive input device; using a screen scraping functionality; using an email functionality; using an SMS functionality; and using an instant messaging functionality (Paragraph 144).

The examiner notes that **Wang** teaches **"wherein said employing computerized answer retrieving functionality provides said at least one**

additional search term by retrieving search terms, acquired other than in response to earlier questions, received by said computerized answer retrieving functionality prior to receipt of said query from said user" as "FIG. 8 shows an example screen display 800 of the search engine UI 200. The screen display has a query entry area 802 that allows user to enter natural language questions. Consider, for example, the following two queries in the traveling domain search" (Paragraph 144).

Regarding claim 6, **Wang** further teaches a document searching method comprising:

A) wherein said employing computerized answer retrieving functionality to generate document search terms comprises utilizing computerized query normalizing functionality for normalizing said query (Paragraphs 54, 77, and 82).

The examiner notes that **Wang** teaches **"wherein said employing computerized answer retrieving functionality to generate document search terms comprises utilizing computerized query normalizing functionality for normalizing said query"** as "The robust parser 142 includes a natural language parser (NLP) 202 that parses the query string according to rules kept in a rules database 204. The parsed output is ranked with a confidence rating to indicate how likely the output represents the query intensions" (Paragraph 54), "Unlike traditional parsing that require a hypothesis and a partial parse to cover adjacent words in the input, robust parsing relaxes this requirement, making it possible to omit noisy words in the input. If a user query contains words that are not parsable, the natural language parsing module 142 can skip these words or phrases and still output a result" (Paragraph 77), and "With reference again to FIG. 4, after segmentation, the segmented sentence to is passed a natural language parser 410 and a keyword modules. The parser 410 attempts to parse the segmented sentence according to a set of rules found in a rule database 414" (Paragraph 82).

Regarding claim 7, **Wang** further teaches a document searching method comprising:

A) wherein said normalizing said query is performed based at least in part on at least one of a plurality of query normalization rules (Paragraphs 54, 77, and 82).

The examiner notes that **Wang** teaches **"wherein said normalizing said query is performed based at least in part on at least one of a plurality of query normalization rules"** as "The robust parser 142 includes a natural language parser (NLP) 202 that parses the query string according to rules kept in a rules database 204. The parsed output is ranked with a confidence rating to indicate how likely the output represents the query intensions" (Paragraph 54), "Unlike traditional parsing that require a hypothesis and a partial parse to cover adjacent words in the input, robust parsing relaxes this requirement, making it possible to omit noisy words in the input. If a user query contains words that are not parsable, the natural language parsing module 142 can skip these words or phrases and still output a result" (Paragraph 77), and "With reference again to FIG. 4, after segmentation, the segmented sentence to is passed a natural language parser 410 and a keyword modules. The parser 410 attempts to parse the segmented sentence according to a set of rules found in a rule database 414" (Paragraph 82).

Regarding claim 8, **Wang** further teaches a document searching method comprising:

A) wherein said employing computerized answer retrieving functionality to generate document search terms comprises generating document search terms, including said at least one additional search term not present in said query by replacing at least one word in said query by at least one selected synonym thereof (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said employing computerized answer retrieving functionality to generate document search terms comprises generating document search terms, including said at least**

one additional search term not present in said query by replacing at least one word in said query by at least one selected synonym thereof" as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 9, **Wang** further teaches a document searching method comprising:

A) wherein said replacing at least one word in said query by at least one selected synonym thereof comprises employing computerized synonym retrieving functionality to identify said at least one selected synonym at least partially by reference to at least one word in said query other than said at least one word which is replaced by said at least one selected synonym (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said replacing at least one word in said query by at least one selected synonym thereof comprises employing computerized synonym retrieving functionality to identify said at least one selected synonym at least partially by reference to at least one word in said query other than said at least one word which is replaced by said at least one selected synonym"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 10, **Wang** further teaches a document searching method comprising:

A) identifying a plurality of synonyms (Paragraph 55); and

B) selecting at least one of said plurality of synonyms for which there exists a phrase in a corpus which is relevant to said query (Paragraph 55).

The examiner notes that **Wang** teaches **"identifying a plurality of synonyms"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55). The examiner further notes that **Wang** teaches **"selecting at least one of said plurality of synonyms for which there exists a phrase in a corpus which is relevant to said query"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 11, **Wang** further teaches a document searching method comprising:

A) wherein said identifying said at least one selected synonym comprises: searching said corpus for occurrences of at least one of said plurality of synonyms for which there exists a phrase in said corpus which is relevant to said query (Paragraph 55); and

B) designating at least one of said plurality of synonyms as a selected synonym in accordance with a number of occurrences in said corpus of a phrase including said at least one of said plurality of synonyms which is relevant to said query (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said identifying said at least one selected synonym comprises: searching said corpus for occurrences of at least one of said plurality of synonyms for which there exists a phrase in said corpus which is relevant to said query"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55). The examiner further notes that **Wang** teaches **"designating at least one of said plurality of synonyms as a selected synonym in accordance with a number of occurrences in said corpus of a phrase including said at least one of said plurality of synonyms which is relevant to said query"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 12, **Wang** further teaches a document searching method comprising:

A) utilizing computerized query processing functionality to process said query prior to said operating said operating computerized search engine functionality

(Paragraph 59);
B) said utilizing computerized query processing functionality including: utilizing said computerized query processing functionality to generate at least one expected answer to said query (Paragraph 59);
C) utilizing said computerized query processing functionality to generate at least one preliminary search engine query based on said at least one expected answer (Paragraph 59);
D) utilizing said computerized query processing functionality to concatenate said at least one preliminary search engine query with said at least one additional search term not present in said query, thereby to form a concatenated search engine query (Paragraph 59);
E) providing said concatenated search engine query to said computerized search engine functionality (Paragraph 59).

The examiner notes that **Wang** teaches **"utilizing computerized query processing functionality to process said query prior to said operating said operating computerized search engine functionality"** as "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59). The examiner further notes that **Wang** teaches **"said utilizing computerized query processing functionality including: utilizing said computerized query processing functionality to generate at least one expected answer to said query"** as "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph

59). The examiner further notes that **Wang** teaches **"utilizing said computerized query processing functionality to generate at least one preliminary search engine query based on said at least one expected answer"** as "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59). The examiner further notes that **Wang** teaches **"utilizing said computerized query processing functionality to concatenate said at least one preliminary search engine query with said at least one additional search term not present in said query, thereby to form a concatenated search engine query"** as "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59). The examiner further notes that **Wang** teaches **"providing said concatenated search engine query to said computerized search engine functionality"** as "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59).

Regarding claim 13, **Wang** further teaches a document searching method comprising:

A) providing a representation of at least one document in said set of documents

to said user (Paragraph 128).

The examiner notes that **Wang** teaches **"providing a representation of at least one document in said set of documents to said user"** as "As shown in answer table 708, every answer has two parts: a URL and its description. In our example, if the user chooses a template 18 (), and value of the parameter is assigned to "", the flight table is returned with the portion of "" in the table shown to the user" (Paragraph 128).

Regarding claim 14, **Wang** further teaches a document searching method comprising:

A) wherein said providing a representation comprises presenting at least one link to said at least one document (Paragraph 128).

The examiner notes that **Wang** teaches **"wherein said providing a representation comprises presenting at least one link to said at least one document"** as "As shown in answer table 708, every answer has two parts: a URL and its description. In our example, if the user chooses a template 18 (), and value of the parameter is assigned to "", the flight table is returned with the portion of "" in the table shown to the user" (Paragraph 128).

Regarding claim 15, **Wang** further teaches a document searching method comprising:

A) extracting at least one answer to said query from at least one document in said set of documents (Paragraph 58); and

B) providing said at least one answer to said user (Paragraphs 58-59)

The examiner notes that **Wang** teaches **"wherein said employing computerized answer retrieving functionality comprises employing artificial intelligence"** as "Concurrent with FAQ-based searching, the NLP module 142 also sends the keywords to a keyword-based module 146 for keyword searching on the user's query. The keyword-based module 146 has a meta-search engine 214 that extracts answers from the Web 216" (Paragraph 58). The examiner

further notes that **Wang** teaches **"providing said at least one answer to said user"** as "Concurrent with FAQ-based searching, the NLP module 142 also sends the keywords to a keyword-based module 146 for keyword searching on the user's query. The keyword-based module 146 has a meta-search engine 214 that extracts answers from the Web 216. The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraphs 58-59).

Regarding claim 18, **Wang** further teaches a document searching method comprising:

A) wherein said providing said at least one answer to said user comprises presenting said at least one answer in an editable report precursor format (Paragraph 128).

The examiner notes that **Wang** teaches **"wherein said providing said at least one answer to said user comprises presenting said at least one answer in an editable report precursor format"** as "As shown in answer table 708, every answer has two parts: a URL and its description. In our example, if the user chooses a template 18 (), and value of the parameter is assigned to "", the flight table is returned with the portion of "" in the table shown to the user" (Paragraph 128).

Regarding claim 19, **Wang** further teaches a document searching method comprising:

A) wherein said employing computerized answer retrieving functionality comprises employing artificial intelligence (Paragraph 54).

The examiner notes that **Wang** teaches **"wherein said employing**

computerized answer retrieving functionality comprises employing artificial intelligence" as "The user enters a search query via the search engine UI 200. A query string is passed to the natural language-based robust parser 142, which performs robust is parsing and extracts syntactic as well as semantic information for natural language queries. The robust parser 142 includes a natural language parser (NLP) 202 that parses the query string according to rules kept in a rules database 204. The parsed output is ranked with a confidence rating to indicate how likely the output represents the query intensions" (Paragraph 54).

Regarding claim 20, **Wang** teaches a system for document searching comprising:

A) a computer, operative to receive, from a user, a query including at least one search term (Paragraphs 22 and 66);

B) computerized answer retrieving functionality operative to generate document search terms including at least one additional search term not present in said query, which said at least one additional search term was acquired, prior to receipt by said computer of said query from said user, by said computerized answer retrieving functionality in response to at least one query in the form of a question (Paragraphs 55-57, 60); and

C) computerized search engine functionality operative to access a set of documents in response to said query, based not only on said at least one search term but also on said at least one additional search term provided by said computerized answer retrieving functionality (Paragraphs 55 and 59).

The examiner notes that **Wang** teaches **"a computer, operative to receive, from a user, a query including at least one search term"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22) and "At block 302, the search engine 140 receives a user query entered at remote client 102. At block 304, the user query is parsed at the natural language robust parser 142 to produce the parsed concepts (if any) and keywords"

(Paragraph 66). The examiner further notes that **Wang** teaches **"computerized answer retrieving functionality operative to generate document search terms including at least one additional search term not present in said query, which said at least one additional search term was acquired, prior to receipt by said computer of said query from said user, by said computerized answer retrieving functionality in response to at least one query in the form of a question"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table. After natural language processing, the concepts and keywords are passed on to the FAQ matcher 144. The FAQ matcher 144 has a FAQ matching component 206 that attempts to match the concepts and keywords to predefined frequently asked questions stored in a FAQ database 208. From the FAQs, the FAQ matching component 206 identifies related templates from a template database 210 that group together similar question parameters. The templates have associated indexed answers that are maintained in an answer database 212" (Paragraphs 55-56) and "In addition to facilitating various search levels in an integrated manner, the search engine architecture 140 also supports a query log analyzer 148 that implements methodology to process query logs for the purpose of obtaining new question templates with indexed answers" (Paragraph 60). The examiner further notes that **Wang** teaches **"computerized search engine functionality operative to access a set of documents in response to said query, based not only on said at least one search term but also on said at least one additional search term provided by said computerized answer retrieving functionality"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and

include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55) and "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 66).

Regarding claim 21, **Wang** further teaches a system for document searching comprising:

A) wherein said query is a question (Paragraphs 22 and 71-76).

The examiner notes that **Wang** teaches **"wherein said query is a question"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22) and "For instance, users who want to know about Chinese restaurants in Seattle might enter queries quite differently, as illustrated by the following examples…Where is the closest Chinese restaurant? What is the best Chinese restaurant in Seattle" (Paragraphs 71-76).

Regarding claim 22, **Wang** further teaches a system for document searching comprising:

A) wherein said query is not a question (Paragraphs 22 and 71-76).

The examiner notes that **Wang** teaches **"wherein said query is a question"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22) and "For instance, users who want to know about Chinese

restaurants in Seattle might enter queries quite differently, as illustrated by the following examples… Chinese restaurants in Seattle. Seattle's best Chinese restaurants" (Paragraphs 71-76).

Regarding claim 23, **Wang** further teaches a system for document searching comprising:

A) wherein said computerized answer retrieving functionality is operative to provide said at least one additional search term, by retrieving search terms acquired other than in response to earlier questions, received by said computerized answer retrieving functionality prior to receipt of said query from said user (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said computerized answer retrieving functionality is operative to provide said at least one additional search term, by retrieving search terms acquired other than in response to earlier questions, received by said computerized answer retrieving functionality prior to receipt of said query from said user"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 24, **Wang** further teaches a system for document searching comprising:

A) wherein said computer is operative to receive said query from at least one of: a keyboard ; a voice responsive input device; a screen scraping functionality; an email functionality; an SMS functionality; and an instant messaging functionality (Paragraph 144).

The examiner notes that **Wang** teaches **"wherein said computer is operative to receive said query from at least one of: a keyboard ; a voice responsive input device; a screen scraping functionality; an email functionality; an SMS functionality; and an instant messaging functionality"** as "FIG. 8 shows an example screen display 800 of the search engine UI 200. The screen display has a query entry area 802 that allows user to enter natural language questions. Consider, for example, the following two queries in the traveling domain search" (Paragraph 144).

Regarding claim 25, **Wang** further teaches a system for document searching comprising:

A) wherein said computerized answer retrieving functionality includes computerized query normalizing functionality for normalizing said query (Paragraphs 54, 77, and 82).

The examiner notes that **Wang** teaches **"wherein said computerized answer retrieving functionality includes computerized query normalizing functionality for normalizing said query"** as "The robust parser 142 includes a natural language parser (NLP) 202 that parses the query string according to rules kept in a rules database 204. The parsed output is ranked with a confidence rating to indicate how likely the output represents the query intensions" (Paragraph 54), "Unlike traditional parsing that require a hypothesis and a partial parse to cover adjacent words in the input, robust parsing relaxes this requirement, making it possible to omit noisy words in the input. If a user query contains words that are not parsable, the natural language parsing module 142 can skip these words or phrases and still output a result" (Paragraph 77), and "With reference again to FIG. 4, after segmentation, the segmented sentence to is passed a natural language parser 410 and a keyword modules. The parser 410 attempts to parse the segmented sentence according to a set of rules found in a rule database 414" (Paragraph 82).

Regarding claim 26, **Wang** further teaches a system for document searching comprising:

A) wherein said computerized query normalizing functionality is operative to normalizing said query is performed based at least in part on at least one of a plurality of query normalization rules (Paragraphs 54, 77, and 82).

The examiner notes that **Wang** teaches **"wherein said computerized query normalizing functionality is operative to normalizing said query is performed based at least in part on at least one of a plurality of query normalization rules"** as "The robust parser 142 includes a natural language parser (NLP) 202 that parses the query string according to rules kept in a rules database 204. The parsed output is ranked with a confidence rating to indicate how likely the output represents the query intensions" (Paragraph 54), "Unlike traditional parsing that require a hypothesis and a partial parse to cover adjacent words in the input, robust parsing relaxes this requirement, making it possible to omit noisy words in the input. If a user query contains words that are not parsable, the natural language parsing module 142 can skip these words or phrases and still output a result" (Paragraph 77), and "With reference again to FIG. 4, after segmentation, the segmented sentence to is passed a natural language parser 410 and a keyword modules. The parser 410 attempts to parse the segmented sentence according to a set of rules found in a rule database 414" (Paragraph 82).

Regarding claim 27, **Wang** further teaches a system for document searching comprising:

A) wherein said computerized query normalizing functionality is operative to generate said at least one additional search term not present in said query by replacing at least one word in said query by at least one selected synonym thereof (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said computerized query normalizing functionality is operative to generate said at least one**

additional search term not present in said query by replacing at least one word in said query by at least one selected synonym thereof" as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 28, **Wang** further teaches a system for document searching comprising:

A) wherein said computerized answer retrieving functionality includes computerized synonym retrieving functionality operative to identify said at least one selected synonym at least partially by reference to at least one word in said query other than said at least one word which is replaced by said at least one selected synonym (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said computerized answer retrieving functionality includes computerized synonym retrieving functionality operative to identify said at least one selected synonym at least partially by reference to at least one word in said query other than said at least one word which is replaced by said at least one selected synonym"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 29, **Wang** further teaches a system for document searching comprising:

A) wherein said computerized answer retrieving functionality includes a corpus and said computerized synonym retrieving functionality is operative to search said corpus for occurrences of at least one of a plurality of synonyms for which there exists a phrase relevant to said query and to designate at least one of said plurality of synonyms as a selected synonym in accordance with a number of occurrences in said corpus of a phrase including said at least one synonym which is relevant to said query (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said computerized answer retrieving functionality includes a corpus and said computerized synonym retrieving functionality is operative to search said corpus for occurrences of at least one of a plurality of synonyms for which there exists a phrase relevant to said query and to designate at least one of said plurality of synonyms as a selected synonym in accordance with a number of occurrences in said corpus of a phrase including said at least one synonym which is relevant to said query"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 30, **Wang** further teaches a system for document searching comprising:

A) a document output device for providing a representation of at least one document ion said set of documents to said user (Paragraph 128).

The examiner notes that **Wang** teaches **"a document output device for providing a representation of at least one document ion said set of**

documents to said user" as "As shown in answer table 708, every answer has two parts: a URL and its description. In our example, if the user chooses a template 18 (), and value of the parameter is assigned to "", the flight table is returned with the portion of "" in the table shown to the user" (Paragraph 128).

Regarding claim 31, **Wang** further teaches a system for document searching comprising:

A) wherein said document output device comprises a display for presenting at least one link to said at least one document (Paragraph 128).

The examiner notes that **Wang** teaches **"wherein said document output device comprises a display for presenting at least one link to said at least one document"** as "As shown in answer table 708, every answer has two parts: a URL and its description. In our example, if the user chooses a template 18 (), and value of the parameter is assigned to "", the flight table is returned with the portion of "" in the table shown to the user" (Paragraph 128).

Regarding claim 32, **Wang** further teaches a system for document searching comprising:

A) computerized answer extraction functionality for extracting at least one answer to said query from at least one document in said set of documents (Paragraph 58); and

B) an answer output device for providing said at least one answer to said user (Paragraphs 58-59)

The examiner notes that **Wang** teaches **"computerized answer extraction functionality for extracting at least one answer to said query from at least one document in said set of documents"** as "Concurrent with FAQ-based searching, the NLP module 142 also sends the keywords to a keyword-based module 146 for keyword searching on the user's query. The keyword-based module 146 has a meta-search engine 214 that extracts answers from the Web 216" (Paragraph 58). The examiner further notes that **Wang**

teaches **"an answer output device for providing said at least one answer to said user"** as "Concurrent with FAQ-based searching, the NLP module 142 also sends the keywords to a keyword-based module 146 for keyword searching on the user's query. The keyword-based module 146 has a meta-search engine 214 that extracts answers from the Web 216. The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraphs 58-59).

Regarding claim 34, **Wang** further teaches a system for document searching comprising:

A) wherein said answer output deice comprises a display for presenting said at least one answer to said user in an editable report precursor format (Paragraph 128).

The examiner notes that **Wang** teaches **"wherein said answer output deice comprises a display for presenting said at least one answer to said user in an editable report precursor f**ormat**"** as "As shown in answer table 708, every answer has two parts: a URL and its description. In our example, if the user chooses a template 18 (), and value of the parameter is assigned to "", the flight table is returned with the portion of "" in the table shown to the user" (Paragraph 128).

Regarding claim 35, **Wang** further teaches a system for document searching comprising:

A) wherein said computerized answer retrieving functionality includes artificial intelligence (Paragraph 54).

The examiner notes that **Wang** teaches **"wherein said computerized**

answer retrieving functionality includes artificial intelligence" as "The user enters a search query via the search engine UI 200. A query string is passed to the natural language-based robust parser 142, which performs robust is parsing and extracts syntactic as well as semantic information for natural language queries. The robust parser 142 includes a natural language parser (NLP) 202 that parses the query string according to rules kept in a rules database 204. The parsed output is ranked with a confidence rating to indicate how likely the output represents the query intensions" (Paragraph 54).

Regarding claim 36, **Wang** teaches an answer extraction method comprising:

A) employing a computer to receive a question from a user (Paragraphs 22, 66, and 71-76);

B) employing a computer network to access a set of documents relevant to said question by employing document search terms derived from said question, said document search terms including at least one additional search term not present in the question, which said at least one additional search term was acquired prior to receipt by said computer of said question from said user (Paragraphs 55-57, 60); and

C) analyzing said set of documents to extract at least one answer to said question (Paragraphs 55 and 59); and

D) providing said at least answer to said user (Paragraphs 55 and 59).

The examiner notes that **Wang** teaches **"employing a computer to receive a question from a user"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22), "At block 302, the search engine 140 receives a user query entered at remote client 102. At block 304, the user query is parsed at the natural language robust parser 142 to produce the parsed concepts (if any) and keywords" (Paragraph 66), and "For instance, users who want to know about Chinese restaurants in Seattle might enter queries quite

differently, as illustrated by the following examples…Where is the closest Chinese restaurant? What is the best Chinese restaurant in Seattle" (Paragraphs 71-76). The examiner further notes that **Wang** teaches **"employing a computer network to access a set of documents relevant to said question by employing document search terms derived from said question, said document search terms including at least one additional search term not present in the question, which said at least one additional search term was acquired prior to receipt by said computer of said question from said user"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table. After natural language processing, the concepts and keywords are passed on to the FAQ matcher 144. The FAQ matcher 144 has a FAQ matching component 206 that attempts to match the concepts and keywords to predefined frequently asked questions stored in a FAQ database 208. From the FAQs, the FAQ matching component 206 identifies related templates from a template database 210 that group together similar question parameters. The templates have associated indexed answers that are maintained in an answer database 212" (Paragraphs 55-56) and "In addition to facilitating various search levels in an integrated manner, the search engine architecture 140 also supports a query log analyzer 148 that implements methodology to process query logs for the purpose of obtaining new question templates with indexed answers" (Paragraph 60). The examiner further notes that **Wang** teaches **"analyzing said set of documents to extract at least one answer to said question"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and

partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55) and "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59). The examiner further notes that **Wang** teaches **"providing said at least answer to said user"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55) and "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59).

Regarding claim 37, **Wang** further teaches an answer extraction method comprising:

A) wherein said employing a computer network includes providing said at least one additional search term, by retrieving search terms acquired in response to earlier questions, received prior to receipt of said question from said user (Paragraphs 55-57, and 60).

The examiner notes that **Wang** teaches **"wherein said employing a computer network includes providing said at least one additional search term, by retrieving search terms acquired in response to earlier questions, received prior to receipt of said question from said user"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table. After natural language processing, the concepts and keywords are passed on to the FAQ matcher 144. The FAQ matcher 144 has a FAQ matching component 206 that attempts to match the concepts and keywords to predefined frequently asked questions stored in a FAQ database 208. From the FAQs, the FAQ matching component 206 identifies related templates from a template database 210 that group together similar question parameters. The templates have associated indexed answers that are maintained in an answer database 212" (Paragraphs 55-56) and "In addition to facilitating various search levels in an integrated manner, the search engine architecture 140 also supports a query log analyzer 148 that implements methodology to process query logs for the purpose of obtaining new question templates with indexed answers" (Paragraph 60).

Regarding claim 38, **Wang** further teaches an answer extraction method comprising:

A) wherein said employing a computer network includes provides at least one additional search term by retrieving search terms, acquired other than in response to earlier questions, received prior to receipt of said question from said user (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said employing a computer network includes provides at least one additional search term by**

retrieving search terms, acquired other than in response to earlier questions, received prior to receipt of said question from said user" as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 39, **Wang** further teaches an answer extraction method comprising:

A) wherein said employing a computer network employs artificial intelligence (Paragraph 54).

The examiner notes that **Wang** teaches **"wherein said employing a computer network employs artificial intelligence"** as "The user enters a search query via the search engine UI 200. A query string is passed to the natural language-based robust parser 142, which performs robust is parsing and extracts syntactic as well as semantic information for natural language queries. The robust parser 142 includes a natural language parser (NLP) 202 that parses the query string according to rules kept in a rules database 204. The parsed output is ranked with a confidence rating to indicate how likely the output represents the query intensions" (Paragraph 54).

Regarding claim 40, **Wang** further teaches an answer extraction method comprising:

A) wherein said employing a computer to receive a question comprises employing said computer to receive said query by at least one of: typing said query; using a voice responsive input device; using a screen scraping functionality; using an email functionality; using an SMS functionality; and using

an instant messaging functionality (Paragraph 144).

The examiner notes that **Wang** teaches **"wherein said employing a computer to receive a question comprises employing said computer to receive said query by at least one of: typing said query; using a voice responsive input device; using a screen scraping functionality; using an email functionality; using an SMS functionality; and using an instant messaging functionality"** as "FIG. 8 shows an example screen display 800 of the search engine UI 200. The screen display has a query entry area 802 that allows user to enter natural language questions. Consider, for example, the following two queries in the traveling domain search" (Paragraph 144).

Regarding claim 41, **Wang** further teaches an answer extraction method comprising:

A) wherein said employing document search terms comprises utilizing computerized question normalizing functionality for normalizing said question (Paragraphs 54, 77, and 82).

The examiner notes that **Wang** teaches **"wherein said employing document search terms comprises utilizing computerized question normalizing functionality for normalizing said question"** as "The robust parser 142 includes a natural language parser (NLP) 202 that parses the query string according to rules kept in a rules database 204. The parsed output is ranked with a confidence rating to indicate how likely the output represents the query intensions" (Paragraph 54), "Unlike traditional parsing that require a hypothesis and a partial parse to cover adjacent words in the input, robust parsing relaxes this requirement, making it possible to omit noisy words in the input. If a user query contains words that are not parsable, the natural language parsing module 142 can skip these words or phrases and still output a result" (Paragraph 77), and "With reference again to FIG. 4, after segmentation, the segmented sentence to is passed a natural language parser 410 and a keyword modules. The parser 410 attempts to parse the segmented sentence according

to a set of rules found in a rule database 414" (Paragraph 82).

Regarding claim 42, **Wang** further teaches an answer extraction method comprising:

A) wherein said normalizing said question is performed based at least in part on at least one of a plurality of question normalization rules (Paragraphs 54, 77, and 82).

The examiner notes that **Wang** teaches **"wherein said normalizing said question is performed based at least in part on at least one of a plurality of question normalization rules"** as "The robust parser 142 includes a natural language parser (NLP) 202 that parses the query string according to rules kept in a rules database 204. The parsed output is ranked with a confidence rating to indicate how likely the output represents the query intensions" (Paragraph 54), "Unlike traditional parsing that require a hypothesis and a partial parse to cover adjacent words in the input, robust parsing relaxes this requirement, making it possible to omit noisy words in the input. If a user query contains words that are not parsable, the natural language parsing module 142 can skip these words or phrases and still output a result" (Paragraph 77), and "With reference again to FIG. 4, after segmentation, the segmented sentence to is passed a natural language parser 410 and a keyword modules. The parser 410 attempts to parse the segmented sentence according to a set of rules found in a rule database 414" (Paragraph 82).

Regarding claim 43, **Wang** further teaches an answer extraction method comprising:

A) wherein said employing document search terms comprises generating document search terms including at least one additional search term not present in said question by replacing at least one word in said query by at least one selected synonym thereof (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said employing**

document search terms comprises generating document search terms including at least one additional search term not present in said question by replacing at least one word in said query by at least one selected synonym thereof" as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 44, **Wang** further teaches an answer extraction method comprising:

A) wherein said replacing one word in said question by at least one selected synonym thereof comprises employing computerized synonym retrieving functionality to identify said at least one selected synonym at least partially by reference to at least one word in said question other than said at least one word which is replaced by said at least one selected synonym (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said replacing one word in said question by at least one selected synonym thereof comprises employing computerized synonym retrieving functionality to identify said at least one selected synonym at least partially by reference to at least one word in said question other than said at least one word which is replaced by said at least one selected synonym"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 45, **Wang** further teaches an answer extraction method comprising:

A) wherein said employing computerized synonym retrieving functionality comprises identifying said at least one selected synonym by: identifying a plurality of synonyms (Paragraph 55); and

B) selecting at least one of said plurality of synonyms for which there exists a phrase relevant to said question in a corpus (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said employing computerized synonym retrieving functionality comprises identifying said at least one selected synonym by: identifying a plurality of synonyms"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55). The examiner further notes that **Wang** teaches **"selecting at least one of said plurality of synonyms for which there exists a phrase relevant to said question in a corpus"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 46, **Wang** further teaches an answer extraction method comprising:

A) searching said corpus for occurrences of at least one of said plurality of

synonyms for which there exists a phrase relevant to said question (Paragraph 55); and

B) designation at least one synonym of said plurality of synonyms as a selected synonym in accordance with a number of occurrences in said corpus of a phrase including at least one synonym which is relevant to said question (Paragraph 55).

The examiner notes that **Wang** teaches **"searching said corpus for occurrences of at least one of said plurality of synonyms for which there exists a phrase relevant to said question"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55). The examiner further notes that **Wang** teaches **"designation at least one synonym of said plurality of synonyms as a selected synonym in accordance with a number of occurrences in said corpus of a phrase including at least one synonym which is relevant to said question"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 47, **Wang** further teaches an answer extraction method comprising:

A) utilizing computerized query processing functionality to process said question prior to said operating said operating computerized question processing

functionality (Paragraph 59);
B) said utilizing computerized question processing functionality including: utilizing said computerized question processing functionality to generate at least one expected answer to said question (Paragraph 59);
C) utilizing said computerized question processing functionality to generate at least one preliminary search engine query based on said at least one expected answer (Paragraph 59);
D) utilizing said computerized question processing functionality to concatenate said at least one preliminary search engine query with said at least one additional search term not present in said question, thereby to form a concatenated search engine query (Paragraph 59);
E) deriving said document search terms from said computerized search engine functionality (Paragraph 59).

The examiner notes that **Wang** teaches **"said utilizing computerized question processing functionality including: utilizing said computerized question processing functionality to generate at least one expected answer to said question"** as "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59). The examiner further notes that **Wang** teaches **"said utilizing computerized query processing functionality including: utilizing said computerized query processing functionality to generate at least one expected answer to said query"** as "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even

more accurate results" (Paragraph 59). The examiner further notes that **Wang** teaches **"utilizing said computerized question processing functionality to generate at least one preliminary search engine query based on said at least one expected answer"** as "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59). The examiner further notes that **Wang** teaches **"utilizing said computerized question processing functionality to concatenate said at least one preliminary search engine query with said at least one additional search term not present in said question, thereby to form a concatenated search engine query"** as "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59). The examiner further notes that **Wang** teaches **"deriving said document search terms from said computerized search engine functionality"** as "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59).

Regarding claim 48, **Wang** further teaches an answer extraction method comprising:

A) wherein said providing at least one answer to said user also comprises providing a representation of at least one document in said set of documents to said user (Paragraph 128).

The examiner notes that **Wang** teaches **"wherein said providing at least one answer to said user also comprises providing a representation of at least one document in said set of documents to said user"** as "As shown in answer table 708, every answer has two parts: a URL and its description. In our example, if the user chooses a template 18 (), and value of the parameter is assigned to "", the flight table is returned with the portion of "" in the table shown to the user" (Paragraph 128).

Regarding claim 49, **Wang** further teaches an answer extraction method comprising:

A) wherein said providing a representation comprises presenting at least one link to said at least one document (Paragraph 128).

The examiner notes that **Wang** teaches **"wherein said providing a representation comprises presenting at least one link to said at least one document"** as "As shown in answer table 708, every answer has two parts: a URL and its description. In our example, if the user chooses a template 18 (), and value of the parameter is assigned to "", the flight table is returned with the portion of "" in the table shown to the user" (Paragraph 128).

Regarding claim 52, **Wang** further teaches an answer extraction method comprising:

A) wherein said providing said at least one answer to said user comprises presenting said at least one answer in an editable report precursor format (Paragraph 128).

The examiner notes that **Wang** teaches **"wherein said providing said at least one answer to said user comprises presenting said at least one answer in an editable report precursor format"** as "As shown in answer table

708, every answer has two parts: a URL and its description. In our example, if the user chooses a template 18 (), and value of the parameter is assigned to "", the flight table is returned with the portion of "" in the table shown to the user" (Paragraph 128).

Regarding claim 53, **Wang** further teaches an answer extraction method comprising:

A) wherein said question is not phrased in question format (Paragraphs 22 and 71-76).

The examiner notes that **Wang** teaches **"wherein said question is not phrased in question format"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22) and "For instance, users who want to know about Chinese restaurants in Seattle might enter queries quite differently, as illustrated by the following examples… Chinese restaurants in Seattle. Seattle's best Chinese restaurants" (Paragraphs 71-76).

Regarding claim 54, **Wang** teaches an answer extraction system comprising:

A) a computer operative to receive a question from a user (Paragraphs 22, 66, and 71-76);

B) computerized answer extraction functionality operative to employ a computer network to access a set of documents relevant to said question by employing document search terms derived by said computer from said question, said document search terms including at least one additional search term not present in the question, which said at least one additional search term was acquired prior to receipt by said computer of said question from said user (Paragraphs 55-57, 60); and

C) computerized answer analysis functionality for analyzing said set of documents to extract at least one answer to said question (Paragraphs 55 and

59); and

D) an output device operative to provide said at least answer to said user (Paragraphs 55 and 59).

The examiner notes that **Wang** teaches **"a computer operative to receive a question from a user"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22), "At block 302, the search engine 140 receives a user query entered at remote client 102. At block 304, the user query is parsed at the natural language robust parser 142 to produce the parsed concepts (if any) and keywords" (Paragraph 66), and "For instance, users who want to know about Chinese restaurants in Seattle might enter queries quite differently, as illustrated by the following examples…Where is the closest Chinese restaurant? What is the best Chinese restaurant in Seattle" (Paragraphs 71-76). The examiner further notes that **Wang** teaches **"computerized answer extraction functionality operative to employ a computer network to access a set of documents relevant to said question by employing document search terms derived by said computer from said question, said document search terms including at least one additional search term not present in the question, which said at least one additional search term was acquired prior to receipt by said computer of said question from said user"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table. After natural language processing, the concepts and keywords are passed on to the FAQ matcher 144. The FAQ matcher 144 has a FAQ matching component 206 that attempts to match the concepts and keywords to predefined frequently asked questions stored in a

FAQ database 208. From the FAQs, the FAQ matching component 206 identifies related templates from a template database 210 that group together similar question parameters. The templates have associated indexed answers that are maintained in an answer database 212" (Paragraphs 55-56) and "In addition to facilitating various search levels in an integrated manner, the search engine architecture 140 also supports a query log analyzer 148 that implements methodology to process query logs for the purpose of obtaining new question templates with indexed answers" (Paragraph 60). The examiner further notes that **Wang** teaches **"computerized answer analysis functionality for analyzing said set of documents to extract at least one answer to said question"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55) and "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59). The examiner further notes that **Wang** teaches **"an output device operative to provide said at least answer to said user"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55)

and “The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results” (Paragraph 59).

Regarding claim 55, **Wang** further teaches an answer extraction system comprising:

A) wherein said computer network provides said at least one additional search term by retrieving search terms, acquired in response to earlier questions, received prior to receipt of said question from said user (Paragraphs 55-57, and 60).

The examiner notes that **Wang** teaches **“wherein said computer network provides said at least one additional search term by retrieving search terms, acquired in response to earlier questions, received prior to receipt of said question from said user”** as “The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table. After natural language processing, the concepts and keywords are passed on to the FAQ matcher 144. The FAQ matcher 144 has a FAQ matching component 206 that attempts to match the concepts and keywords to predefined frequently asked questions stored in a FAQ database 208. From the FAQs, the FAQ matching component 206 identifies related templates from a template database 210 that group together similar question parameters. The templates have associated indexed answers that are maintained in an answer database 212” (Paragraphs

55-56) and “In addition to facilitating various search levels in an integrated manner, the search engine architecture 140 also supports a query log analyzer 148 that implements methodology to process query logs for the purpose of obtaining new question templates with indexed answers” (Paragraph 60).

Regarding claim 56, **Wang** further teaches an answer extraction system comprising:

A) wherein said computer network provides at least one additional search term by retrieving search terms, acquired other than in response to earlier questions, received prior to receipt of said question from said user (Paragraph 55).

The examiner notes that **Wang** teaches **“wherein said computer network provides at least one additional search term by retrieving search terms, acquired other than in response to earlier questions, received prior to receipt of said question from said user”** as “The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table” (Paragraph 55).

Regarding claim 57, **Wang** further teaches an answer extraction system comprising:

A) wherein said computer employs artificial intelligence (Paragraph 54).

The examiner notes that **Wang** teaches **“wherein said computer employs artificial intelligence”** as “The user enters a search query via the search engine UI 200. A query string is passed to the natural language-based robust parser 142, which performs robust is parsing and extracts syntactic as well as semantic information for natural language queries. The robust parser 142 includes a natural language parser (NLP) 202 that parses the query string

according to rules kept in a rules database 204. The parsed output is ranked with a confidence rating to indicate how likely the output represents the query intensions" (Paragraph 54).

Regarding claim 58, **Wang** further teaches an answer extraction system comprising:

A) wherein said computer is operative to receive said question from at least one of: a keyboard ; a voice responsive input device; a screen scraping functionality; an email functionality; an SMS functionality; and an instant messaging functionality (Paragraph 144).

The examiner notes that **Wang** teaches **"wherein said computer is operative to receive said question from at least one of: a keyboard ; a voice responsive input device; a screen scraping functionality; an email functionality; an SMS functionality; and an instant messaging functionality"** as "FIG. 8 shows an example screen display 800 of the search engine UI 200. The screen display has a query entry area 802 that allows user to enter natural language questions. Consider, for example, the following two queries in the traveling domain search" (Paragraph 144).

Regarding claim 59, **Wang** further teaches an answer extraction system comprising:

A) wherein said computerized answer extraction functionality includes computerized question normalizing functionality for normalizing said question (Paragraphs 54, 77, and 82).

The examiner notes that **Wang** teaches **"wherein said computerized answer extraction functionality includes computerized question normalizing functionality for normalizing said question"** as "The robust parser 142 includes a natural language parser (NLP) 202 that parses the query string according to rules kept in a rules database 204. The parsed output is ranked with a confidence rating to indicate how likely the output represents the

query intensions" (Paragraph 54), "Unlike traditional parsing that require a hypothesis and a partial parse to cover adjacent words in the input, robust parsing relaxes this requirement, making it possible to omit noisy words in the input. If a user query contains words that are not parsable, the natural language parsing module 142 can skip these words or phrases and still output a result" (Paragraph 77), and "With reference again to FIG. 4, after segmentation, the segmented sentence to is passed a natural language parser 410 and a keyword modules. The parser 410 attempts to parse the segmented sentence according to a set of rules found in a rule database 414" (Paragraph 82).

Regarding claim 60, **Wang** further teaches an answer extraction system comprising:

A) wherein said computerized question normalizing functionality is operative to normalize said question based at least in part on at least one of a plurality of question normalization rules (Paragraphs 54, 77, and 82).

The examiner notes that **Wang** teaches **"wherein said computerized question normalizing functionality is operative to normalize said question based at least in part on at least one of a plurality of question normalization rules"** as "The robust parser 142 includes a natural language parser (NLP) 202 that parses the query string according to rules kept in a rules database 204. The parsed output is ranked with a confidence rating to indicate how likely the output represents the query intensions" (Paragraph 54), "Unlike traditional parsing that require a hypothesis and a partial parse to cover adjacent words in the input, robust parsing relaxes this requirement, making it possible to omit noisy words in the input. If a user query contains words that are not parsable, the natural language parsing module 142 can skip these words or phrases and still output a result" (Paragraph 77), and "With reference again to FIG. 4, after segmentation, the segmented sentence to is passed a natural language parser 410 and a keyword modules. The parser 410 attempts to parse the segmented sentence according to a set of rules found in a rule database 414" (Paragraph 82).

Regarding claim 61, **Wang** further teaches an answer extraction system comprising:

A) wherein said computerized answer extraction functionality is operative to generate said at least one additional search term not present in said question by replacing at least one word in said query by at least one selected synonym thereof (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said computerized answer extraction functionality is operative to generate said at least one additional search term not present in said question by replacing at least one word in said query by at least one selected synonym thereof"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 62, **Wang** further teaches an answer extraction system comprising:

A) wherein said computerized answer extraction functionality includes computerized synonym retrieving functionality operative to identify said at least one selected synonym at least partially by reference to at least one word in said question other than said at least one word which is replaced by said at least one selected synonym (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said computerized answer extraction functionality includes computerized synonym retrieving functionality operative to identify said at least one selected synonym at least partially by reference to at least one word in said question other than**

said at least one word which is replaced by said at least one selected synonym" as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 63, **Wang** further teaches an answer extraction system comprising:

A) wherein said computerized synonym retrieving functionality includes a corpus and said computerized synonym retrieving functionality is operative to search said corpus for occurrences of at each one of a plurality of synonyms for which there exists a phrase relevant to said question and to designate at least one of said plurality of synonyms as a selected synonym in accordance with a number of occurrences in said corpus of a phrase including said at least one of said plurality of synonyms relevant to said question (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said computerized synonym retrieving functionality includes a corpus and said computerized synonym retrieving functionality is operative to search said corpus for occurrences of at each one of a plurality of synonyms for which there exists a phrase relevant to said question and to designate at least one of said plurality of synonyms as a selected synonym in accordance with a number of occurrences in said corpus of a phrase including said at least one of said plurality of synonyms relevant to said question"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading

"NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 64, **Wang** further teaches an answer extraction system comprising:

A) wherein said output device is operative to provide a representation of at least one document of said set of documents to said user (Paragraph 128).

The examiner notes that **Wang** teaches **"wherein said output device is operative to provide a representation of at least one document of said set of documents to said user"** as "As shown in answer table 708, every answer has two parts: a URL and its description. In our example, if the user chooses a template 18 (), and value of the parameter is assigned to "", the flight table is returned with the portion of "" in the table shown to the user" (Paragraph 128).

Regarding claim 65, **Wang** further teaches an answer extraction system comprising:

A) wherein said output deice comprises a display for presenting at least one link to said at least one document (Paragraph 128).

The examiner notes that **Wang** teaches **"wherein said output deice comprises a display for presenting at least one link to said at least one document"** as "As shown in answer table 708, every answer has two parts: a URL and its description. In our example, if the user chooses a template 18 (), and value of the parameter is assigned to "", the flight table is returned with the portion of "" in the table shown to the user" (Paragraph 128).

Regarding claim 67, **Wang** further teaches an answer extraction system comprising:

A) wherein said output deice comprises a display for presenting said at least one answer in an editable report precursor format (Paragraph 128).

The examiner notes that **Wang** teaches **"wherein said output deice comprises a display for presenting said at least one answer in an editable report precursor format"** as "As shown in answer table 708, every answer has two parts: a URL and its description. In our example, if the user chooses a template 18 (), and value of the parameter is assigned to "", the flight table is returned with the portion of "" in the table shown to the user" (Paragraph 128).

Regarding claim 68, **Wang** further teaches an answer extraction system comprising:

A) wherein said question is not phrased in question format (Paragraphs 22 and 71-76).

The examiner notes that **Wang** teaches **"wherein said question is not phrased in question format"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22) and "For instance, users who want to know about Chinese restaurants in Seattle might enter queries quite differently, as illustrated by the following examples… Chinese restaurants in Seattle. Seattle's best Chinese restaurants" (Paragraphs 71-76).

Regarding claim 197, **Wang** teaches a document searching method comprising:

A) employing a computer to receive a query including at least one search term from a user (Paragraphs 22 and 66);

B) employing computerized synonym retrieving functionality operative in response to queries to generate document search terms including at least one additional search term not present in said query (Paragraph 55);

C) said computerized synonym retrieving functionality being operative to generate said at least one additional search term by replacing at least one word in said query by at least one selected synonym thereof (Paragraph 55);

D) operating computerized search engine functionality to access a set of

documents in response to said query, based on at least one of said at least one search term supplied by a user and said at least one additional search term provided by said computerized synonym retrieving functionality (Paragraphs 55 and 59);

E) said computerized synonym retrieving functionality being operative to identify said at least one selected synonym at least partially by reference to at least one word in said query other than said at least one word (Paragraphs 55 and 59).

The examiner notes that **Wang** teaches **"employing a computer to receive a query including at least one search term from a user"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22) and "At block 302, the search engine 140 receives a user query entered at remote client 102. At block 304, the user query is parsed at the natural language robust parser 142 to produce the parsed concepts (if any) and keywords" (Paragraph 66). The examiner further notes that **Wang** teaches **"employing computerized synonym retrieving functionality operative in response to queries to generate document search terms including at least one additional search term not present in said query"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55). The examiner further notes that **Wang** teaches **"said computerized synonym retrieving functionality being operative to generate said at least one additional search term by replacing at least one word in said query by at least one selected synonym thereof"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a

parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55). The examiner further notes that **Wang** teaches **"operating computerized search engine functionality to access a set of documents in response to said query, based on at least one of said at least one search term supplied by a user and said at least one additional search term provided by said computerized synonym retrieving functionality"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table. After natural language processing, the concepts and keywords are passed on to the FAQ matcher 144. The FAQ matcher 144 has a FAQ matching component 206 that attempts to match the concepts and keywords to predefined frequently asked questions stored in a FAQ database 208. From the FAQs, the FAQ matching component 206 identifies related templates from a template database 210 that group together similar question parameters. The templates have associated indexed answers that are maintained in an answer database 212" (Paragraphs 55-56) and "In addition to facilitating various search levels in an integrated manner, the search engine architecture 140 also supports a query log analyzer 148 that implements methodology to process query logs for the purpose of obtaining new question templates with indexed answers" (Paragraph 60). The examiner further notes that **Wang** teaches **"said computerized synonym retrieving functionality being operative to identify said at least one selected synonym at least partially by reference to at least one word in said query other than said at least one word"** as "The output of the natural language

robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55) and "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59).

Regarding claim 198, **Wang** further teaches a document searching method comprising:

A) wherein said computerized synonym retrieving functionality is operative to identify said at least one selected synonym by: identifying a plurality of synonyms (Paragraph 55); and

B) selecting at least one of said plurality of synonyms for which there exists a phrase relevant to said query in a corpus (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said computerized synonym retrieving functionality is operative to identify said at least one selected synonym by: identifying a plurality of synonyms"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55). The examiner further notes that **Wang** teaches **"selecting at least one of**

said plurality of synonyms for which there exists a phrase relevant to said query in a corpus" as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 199, **Wang** further teaches a document searching method comprising:

A) wherein said computerized synonym retrieving functionality is operative to identify said selected synonym by: searching said corpus for occurrences of said at least one of said plurality of synonyms for which there exists a phrase relevant to said query (Paragraph 55); and

B) designating at least one of said plurality of synonyms as a selected synonym in accordance with the number of occurrences in said corpus of a phrase including said at least one of said plurality of synonyms which is relevant to said query (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said computerized synonym retrieving functionality is operative to identify said selected synonym by: searching said corpus for occurrences of said at least one of said plurality of synonyms for which there exists a phrase relevant to said query"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55). The examiner further notes that **Wang** teaches

"designating at least one of said plurality of synonyms as a selected synonym in accordance with the number of occurrences in said corpus of a phrase including said at least one of said plurality of synonyms which is relevant to said query" as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 200, **Wang** further teaches a document searching method comprising:

A) wherein said query is a question (Paragraphs 22, 66, and 71-76).

The examiner notes that **Wang** teaches **"wherein said query is a question"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22), "At block 302, the search engine 140 receives a user query entered at remote client 102. At block 304, the user query is parsed at the natural language robust parser 142 to produce the parsed concepts (if any) and keywords" (Paragraph 66), and "What is the best Chinese restaurant in Seattle?" (Paragraph 76).

Regarding claim 201, **Wang** further teaches a document searching method comprising:

A) wherein said query is not a question (Paragraphs 22 and 71-76).

The examiner notes that **Wang** teaches **"wherein said query is not a question"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22) and "For instance, users who want to know about Chinese

restaurants in Seattle might enter queries quite differently, as illustrated by the following examples… Chinese restaurants in Seattle. Seattle's best Chinese restaurants" (Paragraphs 71-76).

Regarding claim 202, **Wang** further teaches a document searching method comprising:

A) wherein said at least one word in said query which is replaced by said at least one selected synonym thereof comprises at least one of a noun, a verb, an object of a verb and a subject of a verb (Paragraphs 55 and 71-76).

The examiner notes that **Wang** teaches **"wherein said query is not a question"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55) and "For instance, users who want to know about Chinese restaurants in Seattle might enter queries quite differently, as illustrated by the following examples… Chinese restaurants in Seattle. Seattle's best Chinese restaurants" (Paragraphs 71-76).

Regarding claim 203, **Wang** teaches a document searching system comprising:

A) a computer operative to receive a query including at least one search term from a user (Paragraphs 22 and 66);

B) computerized synonym retrieving functionality operative, in response to queries, to generate document search terms, including at least one additional search term not present in said query (Paragraph 55);

C) to generate said at least one additional search term by replacing at least one word in said query by at least one selected synonym thereof (Paragraph 55);

D) computerized search engine functionality operative to access a set of documents in response to said query, based on at least one of said at least one search term supplied by a user and said at least one additional search term provided by said computerized synonym retrieving functionality (Paragraphs 55 and 59);
E) said computerized synonym retrieving functionality being operative to identify said selected synonym at least partially by reference to a word in said query other than said at least one word (Paragraphs 55 and 59).

The examiner notes that **Wang** teaches **"a computer operative to receive a query including at least one search term from a user"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22) and "At block 302, the search engine 140 receives a user query entered at remote client 102. At block 304, the user query is parsed at the natural language robust parser 142 to produce the parsed concepts (if any) and keywords" (Paragraph 66). The examiner further notes that **Wang** teaches **"computerized synonym retrieving functionality operative, in response to queries, to generate document search terms, including at least one additional search term not present in said query"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55). The examiner further notes that **Wang** teaches **"to generate said at least one additional search term by replacing at least one word in said query by at least one selected synonym thereof"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree)

and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55). The examiner further notes that **Wang** teaches **"computerized search engine functionality operative to access a set of documents in response to said query, based on at least one of said at least one search term supplied by a user and said at least one additional search term provided by said computerized synonym retrieving functionality"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table. After natural language processing, the concepts and keywords are passed on to the FAQ matcher 144. The FAQ matcher 144 has a FAQ matching component 206 that attempts to match the concepts and keywords to predefined frequently asked questions stored in a FAQ database 208. From the FAQs, the FAQ matching component 206 identifies related templates from a template database 210 that group together similar question parameters. The templates have associated indexed answers that are maintained in an answer database 212" (Paragraphs 55-56) and "In addition to facilitating various search levels in an integrated manner, the search engine architecture 140 also supports a query log analyzer 148 that implements methodology to process query logs for the purpose of obtaining new question templates with indexed answers" (Paragraph 60). The examiner further notes that **Wang** teaches **"said computerized synonym retrieving functionality being operative to identify said selected synonym at least partially by reference to a word in said query other than said at least one word"** as "The output of the natural language robust parser 142 is a collection of

concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55) and "The answers returned from the FAQ matcher 144 and keyword searcher 146 are presented to the user via UI 200. The user is asked to confirm which, if any, of the returned answers best exemplifies the user's intentions in the query. By analyzing which results the user selects, the search engine may further refine the search using the confirmed answer as a starting point and return even more accurate results" (Paragraph 59).

Regarding claim 204, **Wang** further teaches a document searching system comprising:

A) wherein said computerized synonym retrieving functionality comprises a synonym selector operative to identify a plurality of synonyms (Paragraph 55); and

B) to select at least one of said plurality of synonyms for which there exists a phrase relevant to said query in a corpus (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said computerized synonym retrieving functionality comprises a synonym selector operative to identify a plurality of synonyms"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55). The examiner further notes that **Wang** teaches **"to select at least one of said**

plurality of synonyms for which there exists a phrase relevant to said query in a corpus" as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 205, **Wang** further teaches a document searching system comprising:

A) wherein said synonym selector is operative to identify said selected synonym by: searching said corpus for occurrences of said at least one of said plurality of synonyms for which there exists a phrase relevant to said query (Paragraph 55); and

B) designating at least one of said plurality of synonyms as a selected synonym in accordance with the number of occurrences in said corpus of a phrase including said at least one of said plurality of synonyms which is relevant to said query (Paragraph 55).

The examiner notes that **Wang** teaches **"wherein said synonym selector is operative to identify said selected synonym by: searching said corpus for occurrences of said at least one of said plurality of synonyms for which there exists a phrase relevant to said query"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55). The examiner further notes that **Wang** teaches **"designating at least one of**

said plurality of synonyms as a selected synonym in accordance with the number of occurrences in said corpus of a phrase including said at least one of said plurality of synonyms which is relevant to said query" as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55).

Regarding claim 206, **Wang** further teaches a document searching system comprising:

A) wherein said query is a question (Paragraphs 22, 66, and 71-76).

The examiner notes that **Wang** teaches **"wherein said query is a question"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22), "At block 302, the search engine 140 receives a user query entered at remote client 102. At block 304, the user query is parsed at the natural language robust parser 142 to produce the parsed concepts (if any) and keywords" (Paragraph 66), and "What is the best Chinese restaurant in Seattle?" (Paragraph 76).

Regarding claim 207, **Wang** further teaches a document searching system comprising:

A) wherein said query is not a question (Paragraphs 22 and 71-76).

The examiner notes that **Wang** teaches **"wherein said query is not a question"** as "A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches" (Paragraph 22) and "For instance, users who want to know about Chinese

restaurants in Seattle might enter queries quite differently, as illustrated by the following examples… Chinese restaurants in Seattle. Seattle's best Chinese restaurants" (Paragraphs 71-76).

Regarding claim 208, **Wang** further teaches a document searching system comprising:

A) wherein said at least one word in said query which is replaced by said at least one selected synonym thereof comprises at least one of a noun, a verb, an object of a verb and a subject of a verb (Paragraphs 55 and 71-76).

The examiner notes that **Wang** teaches **"wherein said at least one word in said query which is replaced by said at least one selected synonym thereof comprises at least one of a noun, a verb, an object of a verb and a subject of a verb"** as "The output of the natural language robust parser 142 is a collection of concepts and keywords. The concepts are obtained through a semantic analysis and include a fully-parsed output (e.g., a parse tree) and partially-parsed fragments. One suitable semantic analysis is described below in the section under the heading "NL-based Robust Parsing". The keywords are either the key phrases extracted directly from the user query or are expanded queries through a synonym table" (Paragraph 55) and "For instance, users who want to know about Chinese restaurants in Seattle might enter queries quite differently, as illustrated by the following examples… Chinese restaurants in Seattle. Seattle's best Chinese restaurants" (Paragraphs 71-76).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 16-17, 33, 50-51, and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Wang et al.** (U.S. PGPUB 2004/0243568) as applied to claims 1-15, 18-32, 34-49, 52-65, 67-68, and 197-208 above, and further in view of **Ho et al.** (U.S. Patent 6,571,240).

9. Regarding claim 16, **Wang** does not explicitly teach a document searching method comprising:

A) carrying out theme extraction on said at least one document, said theme extraction utilizing statistical analysis of frequency of occurrence of words to identify at least one theme word of said at least one document;

B) extracting sentences from said at least one document;

C) selecting at least one of said sentences as a potential answer;

D) scoring each of said at least one of said sentences selected as a potential answer; and

E) identifying said at least one of said sentences selected as a potential answer based at least partially on results of said scoring.

Ho, however, teaches **"carrying out theme extraction on said at least one document, said theme extraction utilizing statistical analysis of frequency of occurrence of words to identify at least one theme word of said at least one document"** as "In one embodiment, after all of the phrases is identified, each phrase is compared to phrases in both the domain-unspecific and the domain-specific negative dictionaries for ignoring or excluding (Step 254) a number of identified phrases. The remaining phrases are then compared to phrases in the domain-specific dictionary to identify (Step 256) domain-specific phrases. For example, the domain is government, then the phrase, "bills of rights", can be identified as domain-specific phrases" (Column 8, lines 30-38), **"extracting sentences from said at least one document"** as "Then the extractor starts working on the second sentence, and so on, till the last sentence of the document to identify all of the phrases in the document" (Column 8, lines 27-29), **"selecting at least one of said sentences as a potential answer"** as "Once a phrase is found, a document linked to it can be identified, 610, and

extracted to answer the question. In one embodiment, the root URL or the source of the document is also identified with the document. Whether that document is retrieved or not depends also on the source of that document. In one embodiment, if a user is at the Web site of the root URL, and asks a question. A number of documents are identified to respond to the question, with at least one document having its root URL being that Web site. In one approach, that document is presented to the user, or has a higher priority of being presented. In other words, the categorizer can link that document with the source of the document such that whether the document is retrieved by the search engine to be presented to the user can depend on the source of the document" (Column 11, lines 20-35), **"scoring each of said at least one of said sentences selected as a potential answer"** as "In one embodiment, after all of the phrases is identified, each phrase is compared to phrases in both the domain-unspecific and the domain-specific negative dictionaries for ignoring or excluding (Step 254) a number of identified phrases. The remaining phrases are then compared to phrases in the domain-specific dictionary to identify (Step 256) domain-specific phrases. For example, the domain is government, then the phrase, "bills of rights", can be identified as domain-specific phrases" (Column 8, lines 30-38), and **"identifying said at least one of said sentences selected as a potential answer based at least partially on results of said scoring"** as "Once a phrase is found, a document linked to it can be identified, 610, and extracted to answer the question. In one embodiment, the root URL or the source of the document is also identified with the document. Whether that document is retrieved or not depends also on the source of that document. In one embodiment, if a user is at the Web site of the root URL, and asks a question. A number of documents are identified to respond to the question, with at least one document having its root URL being that Web site. In one approach, that document is presented to the user, or has a higher priority of being presented. In other words, the categorizer can link that document with the source of the document such that whether the document is retrieved by the search engine to be presented to the user can

depend on the source of the document" (Column 11, lines 20-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Ho's** would have allowed **Wang's** to provide that processes information to be integrated to a database for a search engine so that the engine can quickly identify appropriate responses when the amount of information is huge and when the information is growing at an astronomical rate, as noted by **Ho** (Column 2, lines 15-20).

Regarding claim 17, **Wang** does not explicitly teach a document searching method comprising:

A) wherein said extracting at least one answer comprises: enhancing said at least one document by: identifying capitalized phrases which appear in said at least one document;

B) identifying designated capitalized words belonging to said capitalized phrases; and

C) adding, to said at least one document, adjacent each occurrence of a designated capitalized word that does not appear in a capitalized phrase, said designated capitalized word that does appear alongside thereof elsewhere in said document in a capitalized phrase; and

D) carrying out analysis of said at least one document in order to identify at least one portion thereof as a potential answer.

Ho, however, teaches **"wherein said extracting at least one answer comprises: enhancing said at least one document by: identifying capitalized phrases which appear in said at least one document"** as "wherein said extracting at least one answer comprises: enhancing said at least one document by: identifying capitalized phrases which appear in said at least one document" (Column 7, lines 63-67-Column 8, lines 1-8), **"identifying designated capitalized words belonging to said capitalized phrases"** as "wherein said extracting at least one answer comprises: enhancing said at least

one document by: identifying capitalized phrases which appear in said at least one document" (Column 7, lines 63-67-Column 8, lines 1-8), **"adding, to said at least one document, adjacent each occurrence of a designated capitalized word that does not appear in a capitalized phrase, said designated capitalized word that does appear alongside thereof elsewhere in said document in a capitalized phrase"** as "wherein said extracting at least one answer comprises: enhancing said at least one document by: identifying capitalized phrases which appear in said at least one document" (Column 7, lines 63-67-Column 8, lines 1-8), and **"carrying out analysis of said at least one document in order to identify at least one portion thereof as a potential answer"** as "Then the extractor starts working on the second sentence, and so on, till the last sentence of the document to identify all of the phrases in the document" (Column 8, lines 27-29).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Ho's** would have allowed **Wang's** to provide that processes information to be integrated to a database for a search engine so that the engine can quickly identify appropriate responses when the amount of information is huge and when the information is growing at an astronomical rate, as noted by **Ho** (Column 2, lines 15-20).

Regarding claim 33, **Wang** does not explicitly teach a system for document searching comprising:

A) wherein said computerized answer extraction functionality includes a document analyzer operative to analyze said at least one document, said document analyzer including: computerized theme extraction functionality for carrying out theme extraction on said at least one document, said theme extraction utilizing statistical analysis of frequency of occurrence of words to identify at least one theme word of said at least one document;

B) computerized sentence extracting functionality for extracting sentences from

said at least one document;

C) a potential answer selector for selecting at least one of said sentences as a potential answer;

D) computerized scoring functionality for scoring each of said at least one of said sentences selected as a potential answer; and

E) a sentence identifier for identifying said at least one of said sentences selected as a potential answer based at least partially on results of said scoring.

Ho, however, teaches **"wherein said computerized answer extraction functionality includes a document analyzer operative to analyze said at least one document, said document analyzer including: computerized theme extraction functionality for carrying out theme extraction on said at least one document, said theme extraction utilizing statistical analysis of frequency of occurrence of words to identify at least one theme word of said at least one document"** as "In one embodiment, after all of the phrases is identified, each phrase is compared to phrases in both the domain-unspecific and the domain-specific negative dictionaries for ignoring or excluding (Step 254) a number of identified phrases. The remaining phrases are then compared to phrases in the domain-specific dictionary to identify (Step 256) domain-specific phrases. For example, the domain is government, then the phrase, "bills of rights", can be identified as domain-specific phrases" (Column 8, lines 30-38), **"computerized sentence extracting functionality for extracting sentences from said at least one document"** as "Then the extractor starts working on the second sentence, and so on, till the last sentence of the document to identify all of the phrases in the document" (Column 8, lines 27-29), **"a potential answer selector for selecting at least one of said sentences as a potential answer"** as "Once a phrase is found, a document linked to it can be identified, 610, and extracted to answer the question. In one embodiment, the root URL or the source of the document is also identified with the document. Whether that document is retrieved or not depends also on the source of that document. In one embodiment, if a user is at the Web site of the root URL, and asks a question. A

number of documents are identified to respond to the question, with at least one document having its root URL being that Web site. In one approach, that document is presented to the user, or has a higher priority of being presented. In other words, the categorizer can link that document with the source of the document such that whether the document is retrieved by the search engine to be presented to the user can depend on the source of the document" (Column 11, lines 20-35), **"computerized scoring functionality for scoring each of said at least one of said sentences selected as a potential answer"** as "In one embodiment, after all of the phrases is identified, each phrase is compared to phrases in both the domain-unspecific and the domain-specific negative dictionaries for ignoring or excluding (Step 254) a number of identified phrases. The remaining phrases are then compared to phrases in the domain-specific dictionary to identify (Step 256) domain-specific phrases. For example, the domain is government, then the phrase, "bills of rights", can be identified as domain-specific phrases" (Column 8, lines 30-38), and **"a sentence identifier for identifying said at least one of said sentences selected as a potential answer based at least partially on results of said scoring"** as "Once a phrase is found, a document linked to it can be identified, 610, and extracted to answer the question. In one embodiment, the root URL or the source of the document is also identified with the document. Whether that document is retrieved or not depends also on the source of that document. In one embodiment, if a user is at the Web site of the root URL, and asks a question. A number of documents are identified to respond to the question, with at least one document having its root URL being that Web site. In one approach, that document is presented to the user, or has a higher priority of being presented. In other words, the categorizer can link that document with the source of the document such that whether the document is retrieved by the search engine to be presented to the user can depend on the source of the document" (Column 11, lines 20-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because

teaching **Ho's** would have allowed **Wang's** to provide that processes information to be integrated to a database for a search engine so that the engine can quickly identify appropriate responses when the amount of information is huge and when the information is growing at an astronomical rate, as noted by **Ho** (Column 2, lines 15-20).

Regarding claim 50, **Wang** does not explicitly teach an answer extraction method comprising:

A) carrying out theme extraction on plural ones of said set of documents, said theme extraction utilizing statistical analysis of frequency of occurrence of words to identify at least one theme word of said at least one document;

B) extracting sentences from said at least one document;

C) selecting at least one of said sentences as a potential answer;

D) scoring each of said at least one of said sentences selected as a potential answer; and

E) identifying said at least one of said sentences selected as a potential answer based at least partially on results of said scoring.

Ho, however, teaches **"carrying out theme extraction on plural ones of said set of documents, said theme extraction utilizing statistical analysis of frequency of occurrence of words to identify at least one theme word of said at least one document"** as "In one embodiment, after all of the phrases is identified, each phrase is compared to phrases in both the domain-unspecific and the domain-specific negative dictionaries for ignoring or excluding (Step 254) a number of identified phrases. The remaining phrases are then compared to phrases in the domain-specific dictionary to identify (Step 256) domain-specific phrases. For example, the domain is government, then the phrase, "bills of rights", can be identified as domain-specific phrases" (Column 8, lines 30-38), **"extracting sentences from said at least one document"** as "Then the extractor starts working on the second sentence, and so on, till the last sentence of the document to identify all of the phrases in the document" (Column 8, lines

27-29), **"selecting at least one of said sentences as a potential answer"** as "Once a phrase is found, a document linked to it can be identified, 610, and extracted to answer the question. In one embodiment, the root URL or the source of the document is also identified with the document. Whether that document is retrieved or not depends also on the source of that document. In one embodiment, if a user is at the Web site of the root URL, and asks a question. A number of documents are identified to respond to the question, with at least one document having its root URL being that Web site. In one approach, that document is presented to the user, or has a higher priority of being presented. In other words, the categorizer can link that document with the source of the document such that whether the document is retrieved by the search engine to be presented to the user can depend on the source of the document" (Column 11, lines 20-35), **"scoring each of said at least one of said sentences selected as a potential answer"** as "In one embodiment, after all of the phrases is identified, each phrase is compared to phrases in both the domain-unspecific and the domain-specific negative dictionaries for ignoring or excluding (Step 254) a number of identified phrases. The remaining phrases are then compared to phrases in the domain-specific dictionary to identify (Step 256) domain-specific phrases. For example, the domain is government, then the phrase, "bills of rights", can be identified as domain-specific phrases" (Column 8, lines 30-38), and **"identifying said at least one of said sentences selected as a potential answer based at least partially on results of said scoring"** as "Once a phrase is found, a document linked to it can be identified, 610, and extracted to answer the question. In one embodiment, the root URL or the source of the document is also identified with the document. Whether that document is retrieved or not depends also on the source of that document. In one embodiment, if a user is at the Web site of the root URL, and asks a question. A number of documents are identified to respond to the question, with at least one document having its root URL being that Web site. In one approach, that document is presented to the user, or has a higher priority of being presented. In other words, the categorizer

can link that document with the source of the document such that whether the document is retrieved by the search engine to be presented to the user can depend on the source of the document" (Column 11, lines 20-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Ho's** would have allowed **Wang's** to provide that processes information to be integrated to a database for a search engine so that the engine can quickly identify appropriate responses when the amount of information is huge and when the information is growing at an astronomical rate, as noted by **Ho** (Column 2, lines 15-20).

Regarding claim 51, **Wang** does not explicitly teach an answer extraction method comprising:
A) wherein said analyzing said set of documents to extract said at least one answer comprises: enhancing said at least one document by: identifying capitalized phrases which appear in said at least one document;
B) identifying designated capitalized words belonging to said capitalized phrases; and
C) adding, to said at least one document adjacent each occurrence of a designated capitalized word that does not appear in a capitalized phrase, said designated capitalized word that does appear alongside thereof elsewhere in said document in a capitalized phrase; and
D) carrying out analysis of said at least one document in order to identify at least one portion thereof as a potential answer.

Ho, however, teaches **"wherein said analyzing said set of documents to extract said at least one answer comprises: enhancing said at least one document by: identifying capitalized phrases which appear in said at least one document"** as "wherein said extracting at least one answer comprises: enhancing said at least one document by: identifying capitalized phrases which appear in said at least one document" (Column 7, lines 63-67-Column 8, lines 1-

8), **"identifying designated capitalized words belonging to said capitalized phrases"** as "wherein said extracting at least one answer comprises: enhancing said at least one document by: identifying capitalized phrases which appear in said at least one document" (Column 7, lines 63-67-Column 8, lines 1-8), **"adding, to said at least one document adjacent each occurrence of a designated capitalized word that does not appear in a capitalized phrase, said designated capitalized word that does appear alongside thereof elsewhere in said document in a capitalized phrase"** as "wherein said extracting at least one answer comprises: enhancing said at least one document by: identifying capitalized phrases which appear in said at least one document" (Column 7, lines 63-67-Column 8, lines 1-8), and **"carrying out analysis of said at least one document in order to identify at least one portion thereof as a potential answer"** as "Then the extractor starts working on the second sentence, and so on, till the last sentence of the document to identify all of the phrases in the document" (Column 8, lines 27-29).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Ho's** would have allowed **Wang's** to provide that processes information to be integrated to a database for a search engine so that the engine can quickly identify appropriate responses when the amount of information is huge and when the information is growing at an astronomical rate, as noted by **Ho** (Column 2, lines 15-20).

Regarding claim 66, **Wang** does not explicitly teach an answer extraction system comprising:

A) wherein said computerized answer extraction functionality includes: computerized theme extraction functionality for carrying out theme extraction on plural ones of said set of documents, said theme extraction utilizing statistical analysis of frequency of occurrence of words to identify at least one theme word of said at least one document;

B) computerized sentence extracting functionality for extracting sentences from said at least one document;

C) a potential answer selector for selecting at least one of said sentences as a potential answer;

D) computerized scoring functionality for scoring each of said at least one of said sentences selected as a potential answer; and

E) a sentence identifier for identifying said at least one of said sentences selected as a potential answer based at least partially on results of said scoring.

Ho, however, teaches **"wherein said computerized answer extraction functionality includes: computerized theme extraction functionality for carrying out theme extraction on plural ones of said set of documents, said theme extraction utilizing statistical analysis of frequency of occurrence of words to identify at least one theme word of said at least one document"** as "In one embodiment, after all of the phrases is identified, each phrase is compared to phrases in both the domain-unspecific and the domain-specific negative dictionaries for ignoring or excluding (Step 254) a number of identified phrases. The remaining phrases are then compared to phrases in the domain-specific dictionary to identify (Step 256) domain-specific phrases. For example, the domain is government, then the phrase, "bills of rights", can be identified as domain-specific phrases" (Column 8, lines 30-38), **"computerized sentence extracting functionality for extracting sentences from said at least one document"** as "Then the extractor starts working on the second sentence, and so on, till the last sentence of the document to identify all of the phrases in the document" (Column 8, lines 27-29), **"a potential answer selector for selecting at least one of said sentences as a potential answer"** as "Once a phrase is found, a document linked to it can be identified, 610, and extracted to answer the question. In one embodiment, the root URL or the source of the document is also identified with the document. Whether that document is retrieved or not depends also on the source of that document. In one embodiment, if a user is at the Web site of the root URL, and asks a question. A number of documents are identified

to respond to the question, with at least one document having its root URL being that Web site. In one approach, that document is presented to the user, or has a higher priority of being presented. In other words, the categorizer can link that document with the source of the document such that whether the document is retrieved by the search engine to be presented to the user can depend on the source of the document" (Column 11, lines 20-35), **"computerized scoring functionality for scoring each of said at least one of said sentences selected as a potential answer"** as "In one embodiment, after all of the phrases is identified, each phrase is compared to phrases in both the domain-unspecific and the domain-specific negative dictionaries for ignoring or excluding (Step 254) a number of identified phrases. The remaining phrases are then compared to phrases in the domain-specific dictionary to identify (Step 256) domain-specific phrases. For example, the domain is government, then the phrase, "bills of rights", can be identified as domain-specific phrases" (Column 8, lines 30-38), and **"a sentence identifier for identifying said at least one of said sentences selected as a potential answer based at least partially on results of said scoring"** as "Once a phrase is found, a document linked to it can be identified, 610, and extracted to answer the question. In one embodiment, the root URL or the source of the document is also identified with the document. Whether that document is retrieved or not depends also on the source of that document. In one embodiment, if a user is at the Web site of the root URL, and asks a question. A number of documents are identified to respond to the question, with at least one document having its root URL being that Web site. In one approach, that document is presented to the user, or has a higher priority of being presented. In other words, the categorizer can link that document with the source of the document such that whether the document is retrieved by the search engine to be presented to the user can depend on the source of the document" (Column 11, lines 20-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because

teaching **Ho's** would have allowed **Wang's** to provide that processes information to be integrated to a database for a search engine so that the engine can quickly identify appropriate responses when the amount of information is huge and when the information is growing at an astronomical rate, as noted by **Ho** (Column 2, lines 15-20).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,745,161 issued to **Arnold et al.** on 01 June 2004. The subject matter disclosed therein is pertinent to that of claims 1-19, 20-35, 36-53, 54-68, 197-202, and 203-208 (e.g., methods to answer question queries).

U.S. Patent 6,751,606 issued to **Fries et al.** on 15 June 2004. The subject matter disclosed therein is pertinent to that of claims 1-19, 20-35, 36-53, 54-68, 197-202, and 203-208 (e.g., methods to answer question queries).

U.S. PGPUB 2004/0249808 issued to **Azzam et al.** on 09 December 2004. The subject matter disclosed therein is pertinent to that of claims 1-19, 20-35, 36-53, 54-68, 197-202, and 203-208 (e.g., methods to answer question queries).

U.S. PGPUB 2004/0117352 issued to **Schabes et al.** on 17 June 2004. The subject matter disclosed therein is pertinent to that of claims 1-19, 20-35, 36-53, 54-68, 197-202, and 203-208 (e.g., methods to answer question queries).

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mahesh Dwivedi whose telephone number is (571) 272-2731. The examiner can normally be reached on Monday to Friday 8:20 am – 4:40 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Vo can be reached (571) 272-3642. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mahesh Dwivedi
Patent Examiner
Art Unit 2168

June 15, 2010
/Mahesh H Dwivedi/
Examiner, Art Unit 2168